

**Abstract**

The proposed sensor system comprises an implantable sensor (1') and a user device associated with the latter. A sensitive liquid is enclosed in the sensor (1'), into which  
5 glucose can penetrate. The viscosity of the mixture consisting of the sensitive liquid and the glucose is measured. The user device, which controls the measurement and its evaluation, consists of a portable device worn externally on the skin. The viscosity is measured on the basis of the rotation of a measuring element (35) which is disposed in the sensor (1') and which can be driven by a driving magnet (24) likewise disposed in  
10 the sensor (1'). The rotation of the measuring element (35) is analysed on the basis of its decay behaviour following switch-off of the driving magnet (24).

In the case of a second exemplary embodiment, the viscosity is measured on the basis of the oscillatory behaviour of an oscillating element which is disposed in the sensor and which can be excited to oscillate by a magnet likewise disposed in the sensor. The  
15 oscillatory behaviour is analysed on the basis of the decay behaviour of the oscillating element following switch-off of the magnet.